

REMARKS

Claims 1-19 are pending in the application. Claims 1 and 3 have been amended and claims 14-17 have been withdrawn pursuant to a restriction requirement. Claims 18-19 are newly added in order that the applicants may more fully claim the subject matter of their invention. No new matter has been introduced by the amendment.

Claim Objection

Claim 3 has been objected to for failing to properly identify the recited "setback distance." This objection is believed overcome in view of the amendment of claim 3 in which the designation "L3" has been inserted to properly identify the setback distance in the claimed relationship. This amendment does not alter the scope of claim 3 in any way whatsoever.

Rejection Under 35 U.S.C. § 102(b)

Claims 1-3 and 6-7 have been rejected over Haruo et al. with respect to the embodiment shown in FIGs. 11 and 14. Further, claims 1, 4-5, and 8-11 have been rejected over Haruo et al. with respect to the embodiment shown in FIGs. 9(a) to 9(c). This rejection is believed overcome in view of the amendment of claim 1 together with the following remarks.

Claim 1, as amended, recites a thin-film magnetic head that includes a lower core layer and a recording core on the lower core layer. The recording core is exposed at a face surface of the magnetic head. The recording core can be either a structure that includes a lower core layer, a gap layer, and an upper pole layer in sequence. Alternatively, the core layer can include a gap layer and an upper pole layer in sequence. An upper core layer is magnetically coupled to the upper pole layer. The upper core layer has a tip surface that contacts the upper pole layer and is located at a setback distance from the face surface. The tip surface is either an inclined surface or a curved surface and is configured such that the setback distance gradually increases in

the track width direction. The increasing setback distances commences from a point where the tip surface contacts the upper pole layer. The applicants respectfully assert that their claimed invention distinguishes over the devices disclosed by Haruo et al. Rather than having an upper core layer whose setback distance gradually increases at a point where the core layer contacts the upper pole layer, in the device shown by Haruo et al. in FIG. 9(b), the yoke section (142a) is substantially vertical where it contacts the point (141) of the upper pole layer (114). Accordingly, the applicants respectfully assert that there is no teaching or suggestion within Haruo et al. for the construction presented at page 5 of the instant Office Action.

Similarly, the applicants respectfully assert that the device shown as FIG. 14 in Haruo et al. does not suggest or disclose their claimed invention. This is at least because the upper core layer (identified as an upper pole layer 92) is not set back from the face surface (ABS side 76). Further, the applicants respectfully assert there is no suggest by Haruo et al. for the arbitrary identification of various portions of the layer (92) as set forth at page 3 of the instant Office Action. The applicants respectfully assert that the claimed configuration of their upper core layer and relationship to the upper pole layer and to the face surface of a thin film magnetic head is not suggested or disclosed by any of the embodiments of Haruo et al.

Claims 4-5 and 8-11 depend either directly or indirectly from claim 1 and recite further aspects of the thin film magnetic head of claim 1. These claims are believed to distinguish over the cited references in view of the amendment and remarks pertaining to claim 1.

Rejection Under 35 U.S.C. § 103(a)

Claims 12 and 13 have been rejected over Chang et al. in view of Yamanaka et al. This rejection is believed overcome in view of the amendment of claim 1 together with the following remarks.

As recited in claim 1, the recording core includes an upper pole layer. The upper core layer, however, is a distinct structure that includes a tip surface which contacts the upper pole layer at a particular location with respect to the face surface (see for example, FIG. 2 of the applicants' drawing). In contrast to the distinct structures recited

in claim 1, the device shown in FIGs. 4 and 7 of Chang et al. is a continuous structure that lacks the claimed contact point of the tip surface to the upper pole layer. Rather than a single continuous structure that is arbitrarily defined to show different regions, the applicants' thin film magnetic head includes distinctly separate layers that have a particular claimed geometric relationship. These distinct structures are not suggested or disclosed by Chang et al.

The deficiency of Chang et al. is not overcome by the addition of Yamanaka et al. This is at least because neither Chang et al. nor Yamanaka et al. suggest or disclose a thin film magnetic head having the particular structure recited by claim 1.

Claims 12 and 13 are believed to distinguish over the cited references in view of their dependence from claim 1.

New Claims

Claim 18 depends from claim 1 and recites a thin film magnetic head having a second core layer overlying the core layer (a first core layer) and separated therefrom by an insulation layer. This structure is not suggested or disclosed by the cited references.

Claim 19 is a new independent claim that recites a thin film magnetic head in which the recording core includes a lower pole layer, a gap layer, and an upper pole layer. An upper core layer is magnetically coupled to the upper pole layer. A first core layer and a second core layer induce a recording magnetic field to the lower core layer, the recording core, and the upper core layer. A tip surface of the upper core layer contacts the upper pole layer at a position set back from the face surface. The setback distance gradually increases from a point where the tip surface contacts the upper core layer.

The applicants respectfully assert that claim 19 distinguishes over the cited references for at least the reasons set forth above pertaining to claims 1 and 18.

The applicants have carefully reviewed the additionally cited references and found them not to be relevant to the applicants' invention as claimed.

The applicants have made a novel and non-obvious contribution to the art of thin-film magnetic head design. The claims at issue are believed to fully distinguish over the cited references and to be in condition for allowance. Accordingly, such allowance is now earnestly requested.

Respectfully submitted,



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